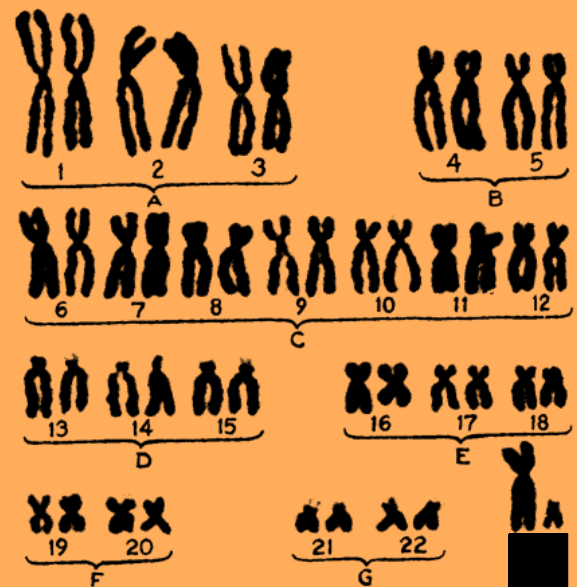
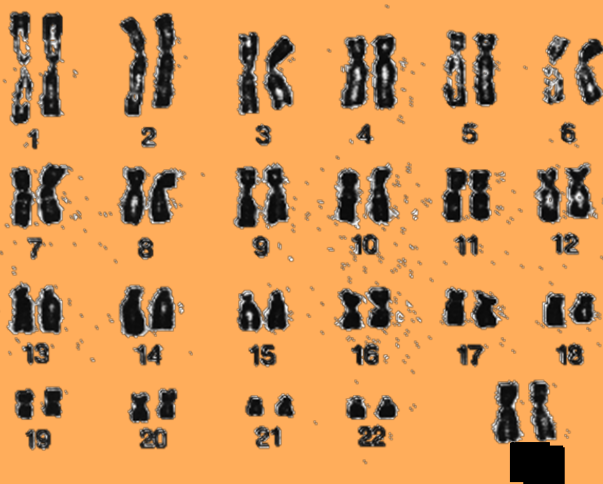


Human Heredity

- When scientist want to study chromosomes they need to look at cells that are undergoing mitosis.
- At this time the chromosomes become condensed and easier to see under the microscope
- A picture is taken of the chromosomes and then the chromosomes are cut out of the picture and arranged in homologous pairs. This arrangement of chromosomes is called a **karyotype** chart.

Which is the karyotype of a boy?



1 pair of sex chromosomes
22 pairs of autosomal chromosomes

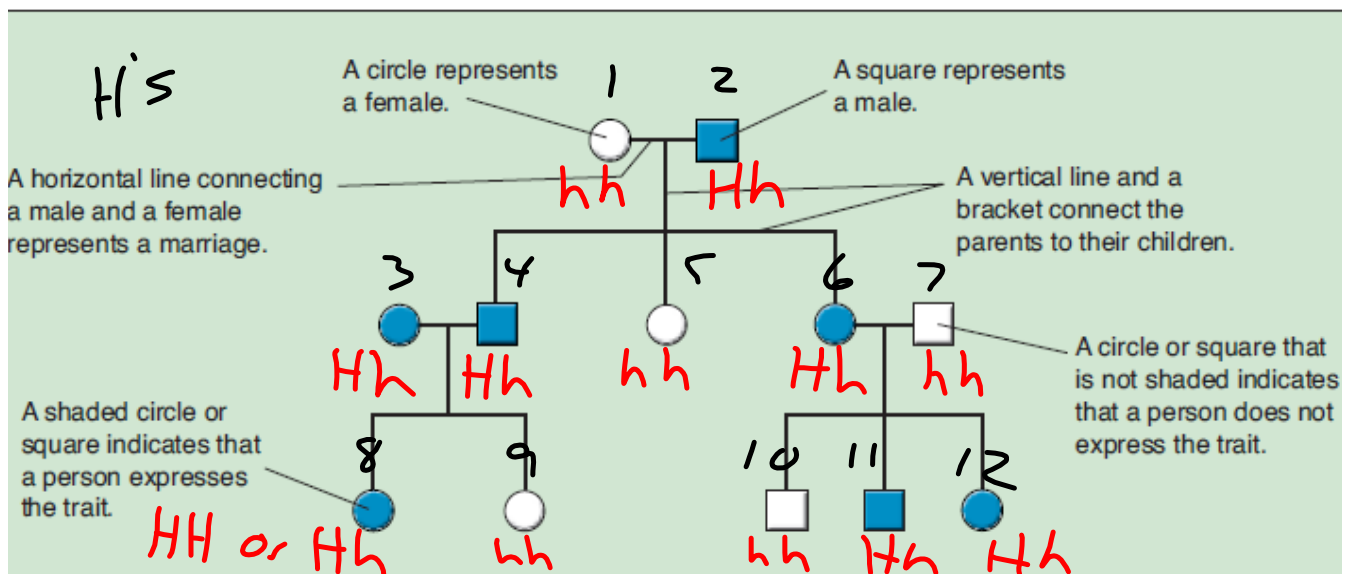
Human Genome Project

- involved in analyzing the human gene sequence
- began in the 1990's and by the earlier 2000's a copy of the human genome was complete (about 6 billion base pairs)
- gene therapy = replacing or repairing faulty genes = very new technology
- functioning gene is attached to a virus
- virus enters cell/nucleus and attaches to a chromosome/gene and replaces faulty part with a new gene
- is this ethical?
- is curing diseases OK?
- how about creating a perfect??human



Lesson 7 Human Genome/ Pedigree Chart

- to study the passing of traits from 1 generation to the next, biologists use a flow chart called a pedigree chart



*sometimes unshaded expresses the trait

Do a count to see what occurs most often - shaded or unshaded
whichever shows up most represents the dominant trait

- this chart represents the trait of a lock of white hair just above the forehead
- the white forelock is a dominant trait
- based on this information determine the genotypes of each person

Lesson 7 Human Genome/ Pedigree Chart

Review Questions:

Page 283: 1-5, 11, 13, 14, 18

Page 363: 2, 5, 6, 7, 10, 12, 14, 15

- ① Mendel → pea plant
cross pollination
- 3 Laws - A - Law of Dominance
- 1 allele is dominant over the other
- B - Law of segregation
Bb alleles separate
- for reproduction
- C - Law of independent assortment
r. ght thumb over left + widow's peak
not connected
the next individual might have right over left but no widow's peak

② Monohybrid Crosses

1 trait

Punnett Square

Genotype RR Rr rr

Phenotype

→ physical characteristic

③ Dihybrid Cross

2 traits

16 boxes

	bD	bD	bD	bD
BD	BbDd	BbDd	BbDd	BbDd
BD				
bD				
bD				

homozygous HH
heterozygous Hh

④ Incomplete dominance

- Intermediate - blending red + white = pink
- Co-dominance - red + white = red + white spots
- * heterozygous genotype Rr

⑤ Multiple Alleles

red - C¹C¹, C¹C², C¹C³, C¹C⁴

Hue - C²C², C²C³, C²C⁴, C³C³

green - C³C³, C³C⁴, C⁴C⁴

white - C⁴C⁴

C¹C², C²C³, C³C⁴

C¹C³, C¹C⁴, C²C⁴

C²C⁴, C³C⁴

blond

A - I^AI^A or I^AI^O

B - I^BI^B or I^BI^O

AB - I^AI^B

O - I^OI^O

⑥ Sex linked Traits

X linked Trait

X^BX^B X^BY

X^BX^b X^bY

X^bX^b X^OY

X^OX^O X^OY

X^OX^B X^OY

X^OX^b X^OY

X^OX^O X^OY

X^OX^B X^OY

X^OX^b X^OY

X^OX^O X^OY

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X^OX^b X^OY

X^OX^O X^OY

X^OX^B X^OY

⑦ Human genome

Gene Therapy

1 2

Hh X^BX^B

X^BX^b X^bY

X^bX^b X^OY

X^OX^O X^OY

X^OX^B X^OY

X^OX^b X^OY

X^OX^O X^OY

X^OX^B X^OY

X^OX^b X^OY

H

Pedigree Chart

1 2

Hh X^BX^B

X^BX^b X^bY

X^bX^b X^OY

X^OX^O X^OY

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